

Now every factory can be cooled



Open Space Cooling is an innovative concept to cool industrial workshops by reducing the workspace temperature to an optimal comfort level. By using 'evaporative air-cooling', free latent energy derived from the air in the form of water evaporation produces cooled air and reduced temperature. In other words, this is the intelligent choice of cost-saving energy for effective cooling.



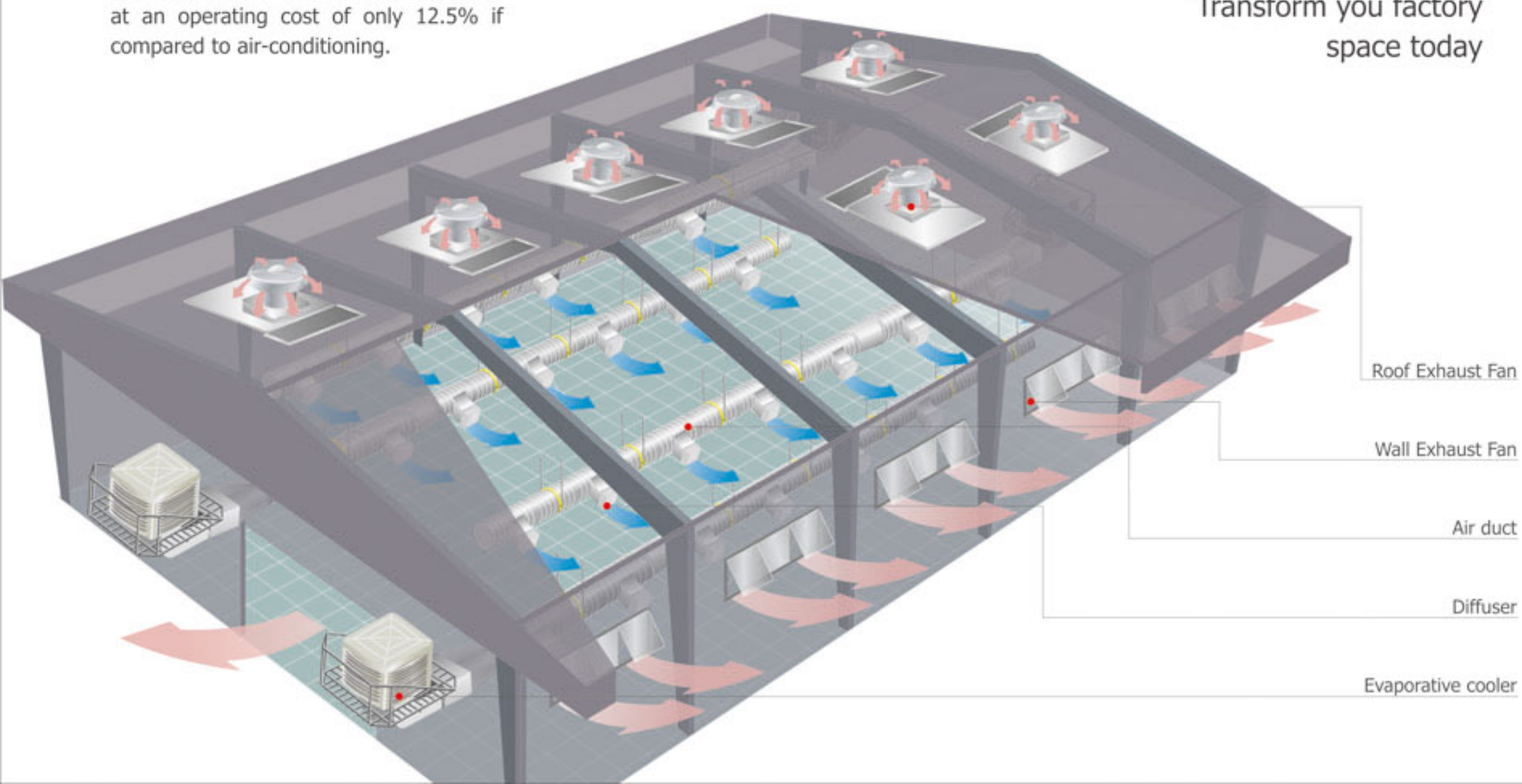
Electrical consumption is only 1/8 of air conditioning as free latent energy is derived from the atmosphere.

Open Space Cooling is an innovative concept to cool industrial workspace bringing down the workspace temperature to an optimum comfort level for better productivity and staff morale. It takes advantage of the latent atmospheric energy by evaporating portion of water in the air, thereby creating cool air. This cool air is created at an operating cost of only 12.5% if compared to air-conditioning.

The temperature in an industrial work space when the outside temperature is say 37°C can result in an inside temperature of 40°C due to the almost enclosed environment. If heat is generated from the work process, the condition can be much worse.

Under these conditions, Open Space Cooling is the large volume of cool, fresh and filtered air from outside and pushed out all the hot and contaminated air from the inside. This creates around the workers a cool and fresh environment in spite of the high prevailing outside temperature and process heat.

Transform your factory space today

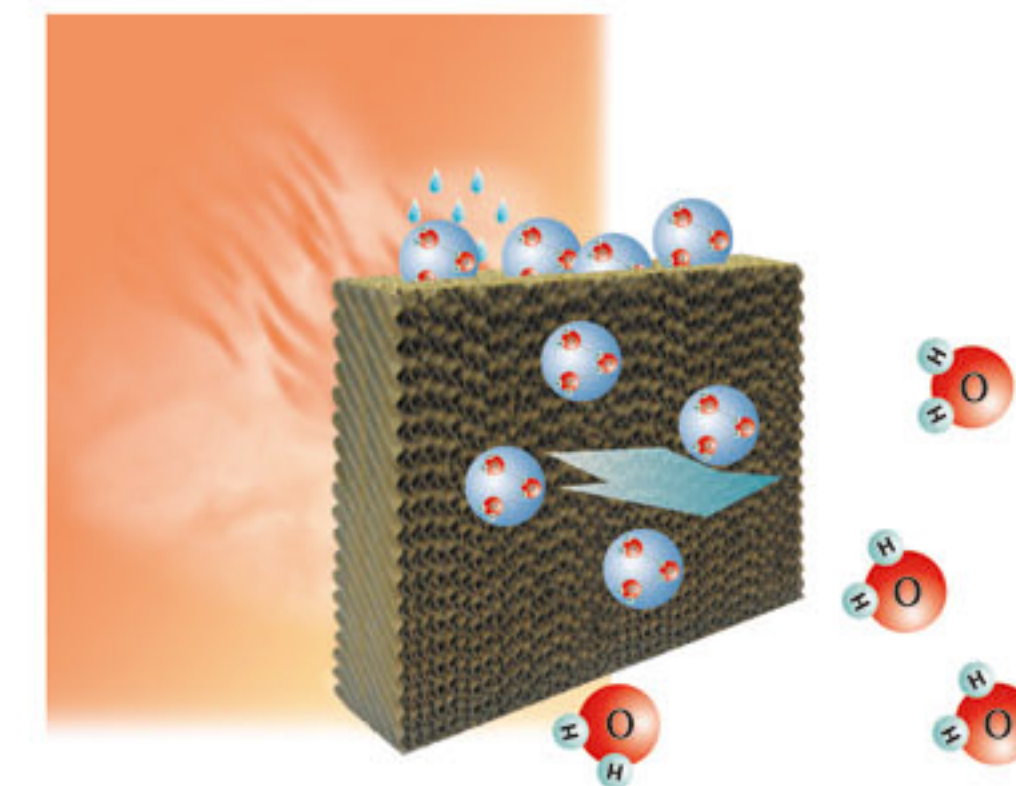


Introduction to Evaporative Cooling

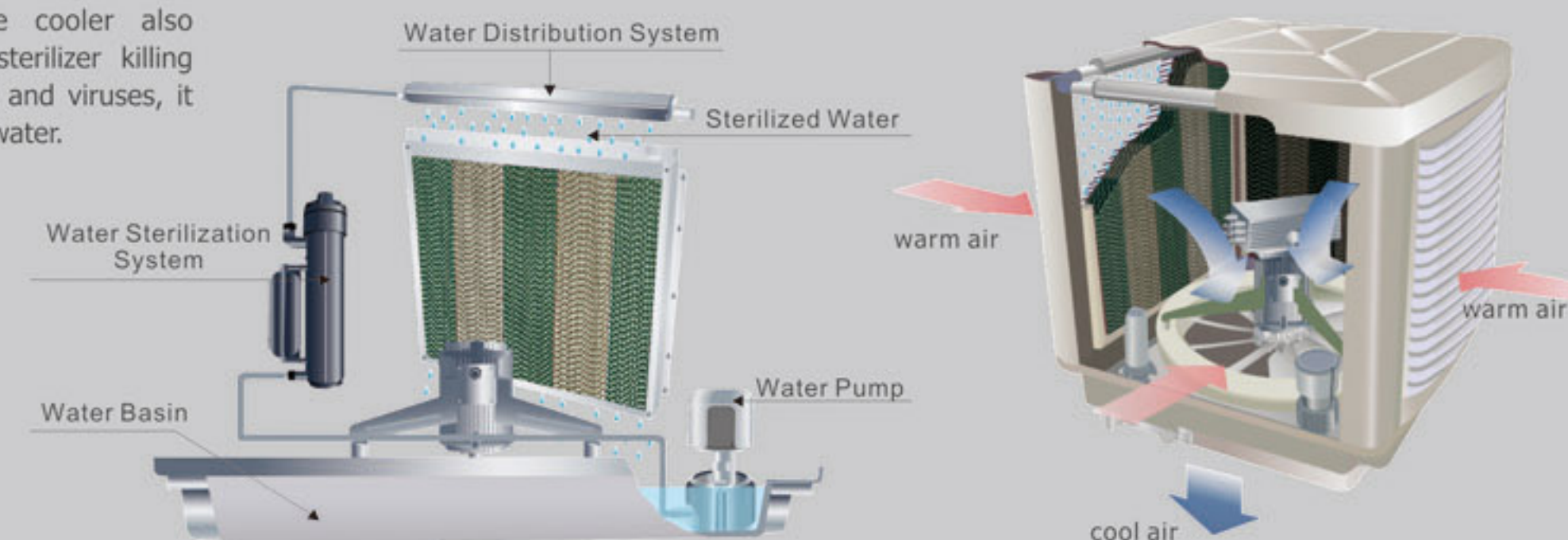
Principles of Evaporative Cooling

Evaporative cooling is a century-old know-how that used water to absorb heat from the air during the evaporation process to bring down the air temperature. Modern technologies in evaporative cooling employ cooling pads made from high-cellulose material that dramatically increases the performance efficiency as well as mechatronics that enhance the operation.

As outside warm air is drawn into the cooler passing the cooling media, part of the water is made to evaporate taking along with it heat from the air itself. The cooled and filtered air is delivered by the cooler fan to workspace through an air duct system to where it is needed.

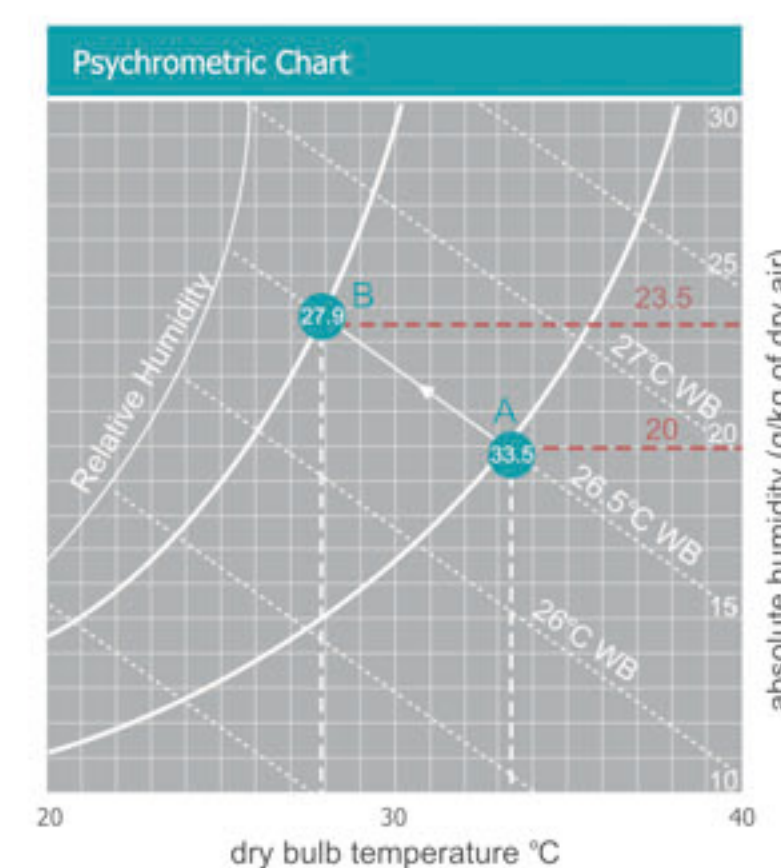


A pump circulates water from the water basin to the top of the cooling media keeping it wet all the time. Modern evaporative cooler also incorporates a UV sterilizer killing the harmful bacteria and viruses, it any in the incoming water.

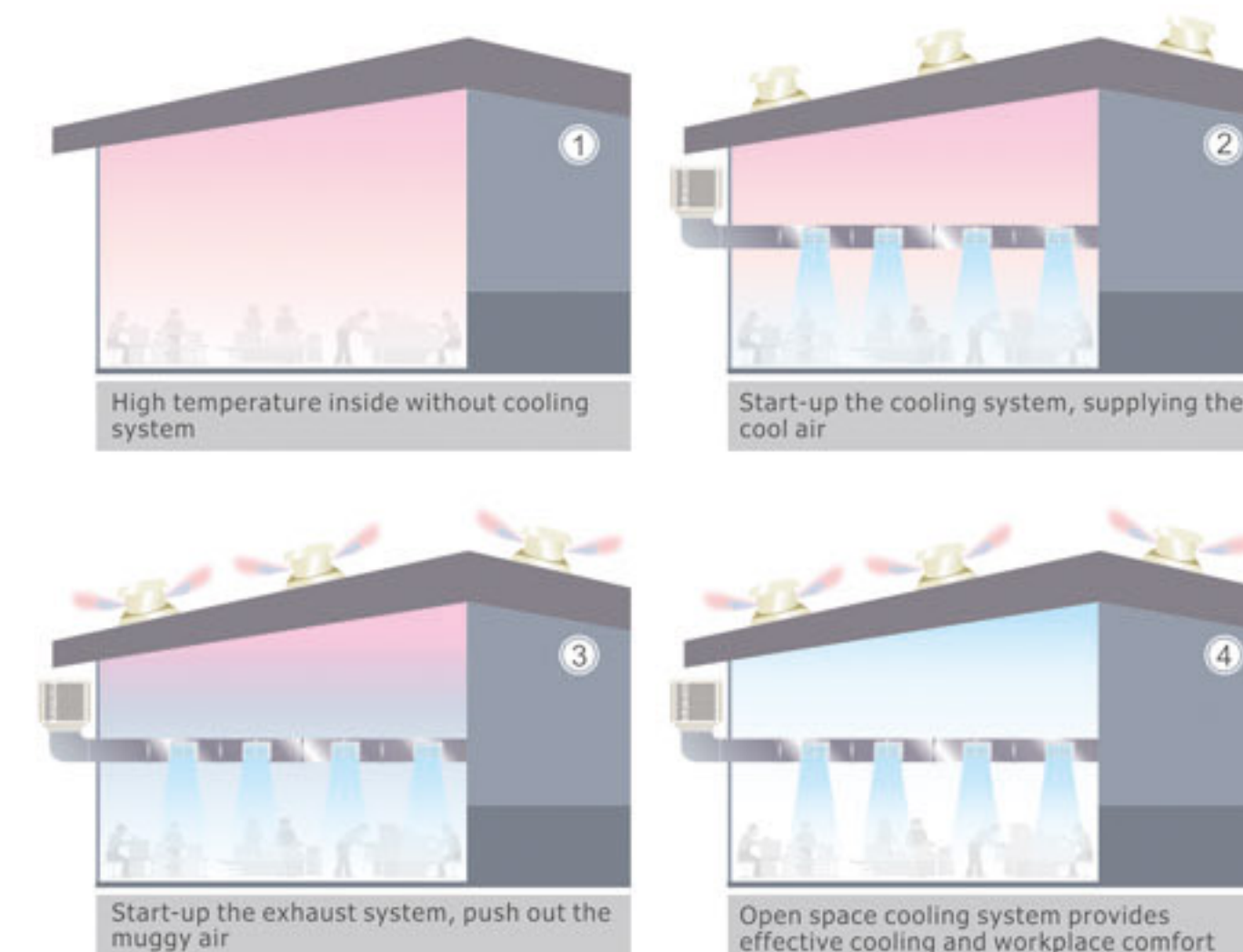


Principles of Industrial Sites Cooling System

Excelair Cooling System provides high performance cooling and ventilation with its advanced system design. The evaporative ventilator unit reduces the outside supply air temperature, and circulated fresh, cooled air to the workplace through the air distribution system of duct and diffuser outlets while exhausting the muggy and hot inside air.







The example taken here shows the air is cooled from 33.5°C to 27.9°C at a saturation efficiency of 80%



Electricity & Water Consumption

Comparing Electricity Consumption and Cooling Effectiveness of Cooling Alternatives
[Based on 1000m² workplace area]

Electrical Energy Consumed					
Cooling Equipment	Type	Evaporative Ventilator	Air-Cooled Condenser	Centrifugal Fan System	Ceiling Fan
	Capacity	16,000 m ³ /hr @120 pa	364,000 BTU/hr	40,000 m ³ /hr @350 pa	1,400 mm. Dia @12m ² /unit
	kW	1.20	38.4	7.5	0.075
Workspace	Area (m) ²	1,000	1,000	1,000	1,000
	Effective Height (m)	4	4	4	4
	Air Change per hour	30	Recirculating	30	Recirculating
Electrical Energy Consumed	Total Units Installed	8	2	3	83
	Total kW Installed (kW)	9.6	76.8	22.5	6.225
	Consumption/year @10hrs/day @26days/mth	29,952 kWh	239,616 kWh	70,200 kWh	19,422 kWh
	Cost with reference to Air-Cooled Condenser	12.5%	100%	29.3%	8.1%
Cooling Effectiveness		Evaporative Ventilator	Air-Cooled Condenser	Centrifugal Fan System	Ceiling Fan
Effects of various cooling methods		Pushes away hot and stale air, ventilates with Cool, Clean & Fresh Air, Power Consumption cost is low.	Circulates cold but stale air. In case of heat generating space, air-conditioning is ineffective. Power consumption is high.	Only can create air exchange but offers no relief as temperature rises.	Only moves ambient air but offers no relief as temperature rises.

Electricity Consumption

Evaporative heat exchanging takes advantage of the principles of latent heat of evaporation where tremendous heat is exchanged when water evaporates. It makes use of the free latent energy in the atmosphere. Compared to air-conditioning which uses mechanical refrigeration, evaporative heat exchanging's operating cost is less than 1/8 of air-conditioning.

Electricity Consumption Cost/Day		
Model	EX767	G20
kW	1.2	1.3
kWh Consumption Per 10 hrs day	10kWH	13kWH
Cost per unit per 10 hrs day	RMB 11.54	RMB 15.0

Water Consumption

The consumption of water in evaporative heat exchanging mainly comes from evaporation and the automatic self-cleaning drain-off.

Water Consumption Cost/Day	
Model	EX767, G20
Consumption on evaporation	200 litres
Consumption on drain-off	80 litres
Total Consumption	280 litres
Water cost per unit per 10hrs day	RMB 0.952

Water Consumption for 130 to 2000m² Workshop (liters)

Water Consumed	Area m ²				
	130	500	1000	1500	2000
No. of Evaporative ventilator	1	4	8	12	15
Water consumption on evaporation	200	800	1600	2400	3000
Water consumption on drain-off	80	320	640	960	1200
Total Water Consumption per day @ 10 hrs operation	280	1120	2240	3360	4200

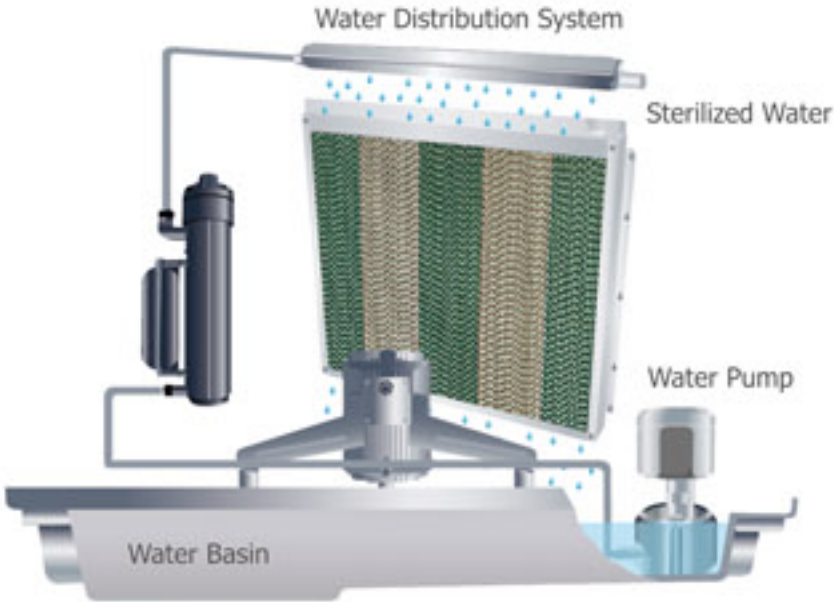
The above shown are based on outdoor climate condition as RH70%-80%, temperature 29-33°C

Model of the Ducted Evaporative Air Conditioning

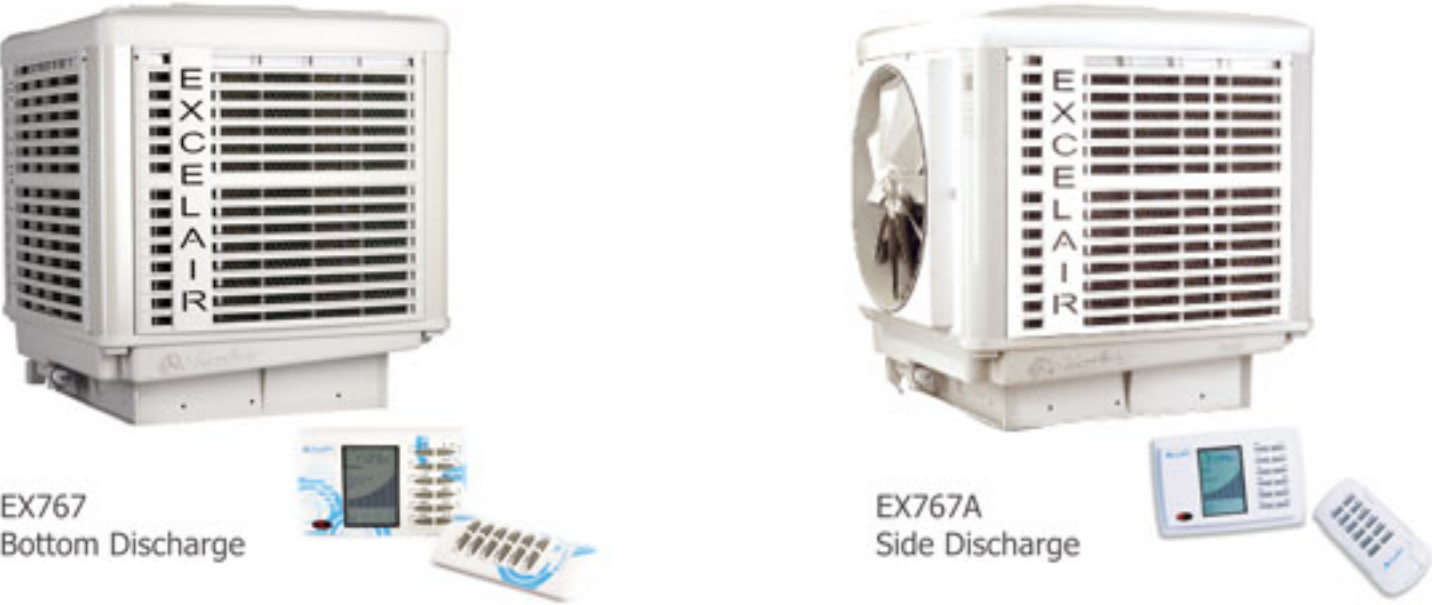
Cleaner air through elimination of any air-borne and water-borne bacteria.

Water Out
The water after sterilization is sent to the water distribution system

Water In
The same water pump sends the water through the UV Sterilizer first before to the cooling pads



Water Sterilization System — The Unit



Model		EX767 Bottom Discharge	EX767A Side Discharge
Performance	Airflow	16000 m ³ /h	15200 m ³ /h
	Max. Air Pressure	120 pa	120 pa
	Designed Air Speed	10 m/s	9.4 m/s
	Evap. Efficiency	~ 92%	~ 92%
	Water Capacity	15 Liters	15 Liters
	Power Supply	220 V, 50 Hz	220 V, 50 Hz
	Power Consumption	0.3 ~ 1.0 kW	0.3 ~ 1.25 kW
Operation	Airflow Adjustment	6 Segment	6 Segment
	Programmed On/Off	6 Stage	6 Stage
	Filter Washing	Auto/Manual	Auto/Manual
	UV Water Sterilizing System	Auto	-
	Auto Drain	Auto	Auto
Dimensions	Size of Dropper Duct	668×668 (mm)	668×668 (mm)
	Make-up Water Inlet	½"	½"
	Drain Water Outlet	40 (mm)	40 (mm)
	Installed Dimension	1040×1040×1105 (mm)	1070×1040×1105 (mm)
Weight	Shipping Dimension	1040×1040×1230 (mm)	1070×1040×1230 (mm)
	Operating Weight	95 kg	89 kg
	Shipping Weight	88 kg	81 kg

Keep Cool
Cools workspace down to about 25-30 °C in tropical climate of Southern China especially in Guangzhou area.

Energy Saving
Electrical consumption is only 8.9% of air conditioning as free latent energy is derived from the atmosphere.

COVERAGE
Each unit covers 100 to 130 m² of workspace, Systems can be added on line-by-line.

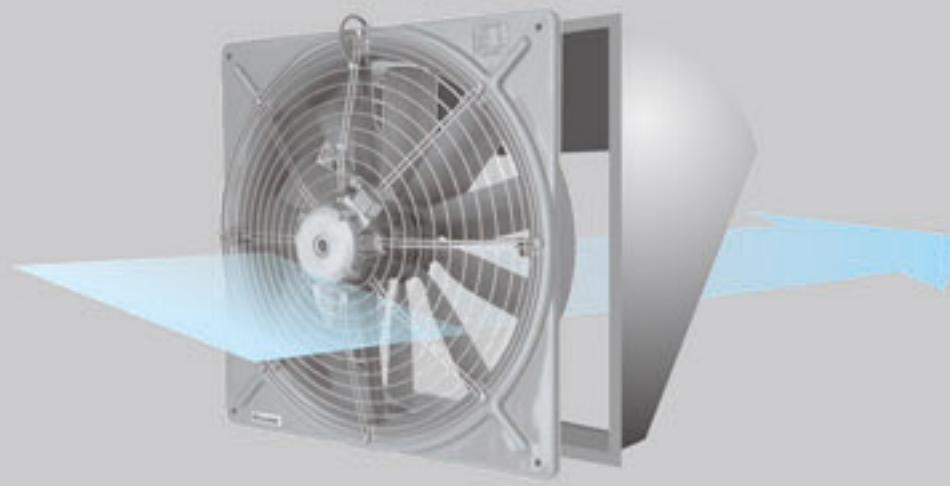
CLEAN Air
Cooling media is capable of filtering dusts in the air 80% of 1µm and supply fresh, cool and clean air to the workspace.

FRESH Air
Supply air is 100% mist free.

Exhaust System - Accessory Series

The Excelair Exhaust System features accessory series of power-saving and noise insulation parts and devices for specific industrial applications. Additional devices such as the "insect-shielding" design of the shutter feature are applicable for industrial settings with hygienic requirements.

Wall Exhaust (Noise Insulation)



- ◆Crust made of high strength plastic
- ◆The impeller designed for air-foil impeller and can be adjusted
- ◆With noise insulation and high efficiency
- ◆Wall or window installation design.

Model	Fan Dia	Airflow	Rotary Speed	Power	Volt	Weight
	mm	m³/h	r/min	W	V	kg
PCJ6.3/730	620	8600	730	200	380	21
PCJ5.0/730	500	5200	730	200	380	16

Anti-insects Shutter



In operation, shutter opened

Stop operation, shutter closed

- ◆Match with Wall/Window exhaust fan
- ◆Low air resistance
- ◆Operate the shutter synchronously with exhaust fan on/off, the insects will be prevented from when it shut down.

Model	Dimension	Power	Weight
	mm	W	kg
AIS6.3	785X785X200	4	12.5
AIS5.0	660X660X200	4	10.5

Minimal Noise Roof Exhaust Fan



In operation, shutter opened

Stop operation, shutter closed

- ◆Compact design for installation on metal and cement roof and equipped with durable waterproof cover
- ◆CAD optimized in design, minimal noise level and highest airflow performance

Model	Fan Dia	Airflow	Rotary Speed	Power	Volt	Weight
	mm	m³/h	r/min	W	V	kg
AI-PRE6.3/950	620	11000	950	300	380	36
PRE6.3/950	620	11000	950	300	380	30

Solar Exhaust Fan SOE490



- ◆Hybrid power supply of solar energy and A/C power
- ◆The exhaust air flow is 3500 m³/h, the power consumption is just 0.35 kwh/unit for 8 hours on sunny day. The operation cost is just ¥0.35
- ◆Light weight, ultra quiet, aging resistance and durable.

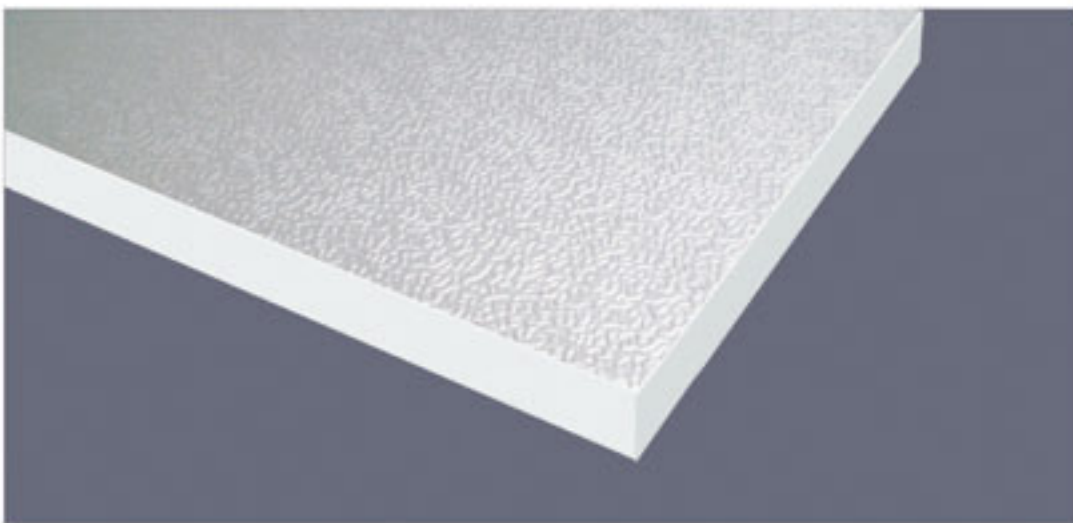
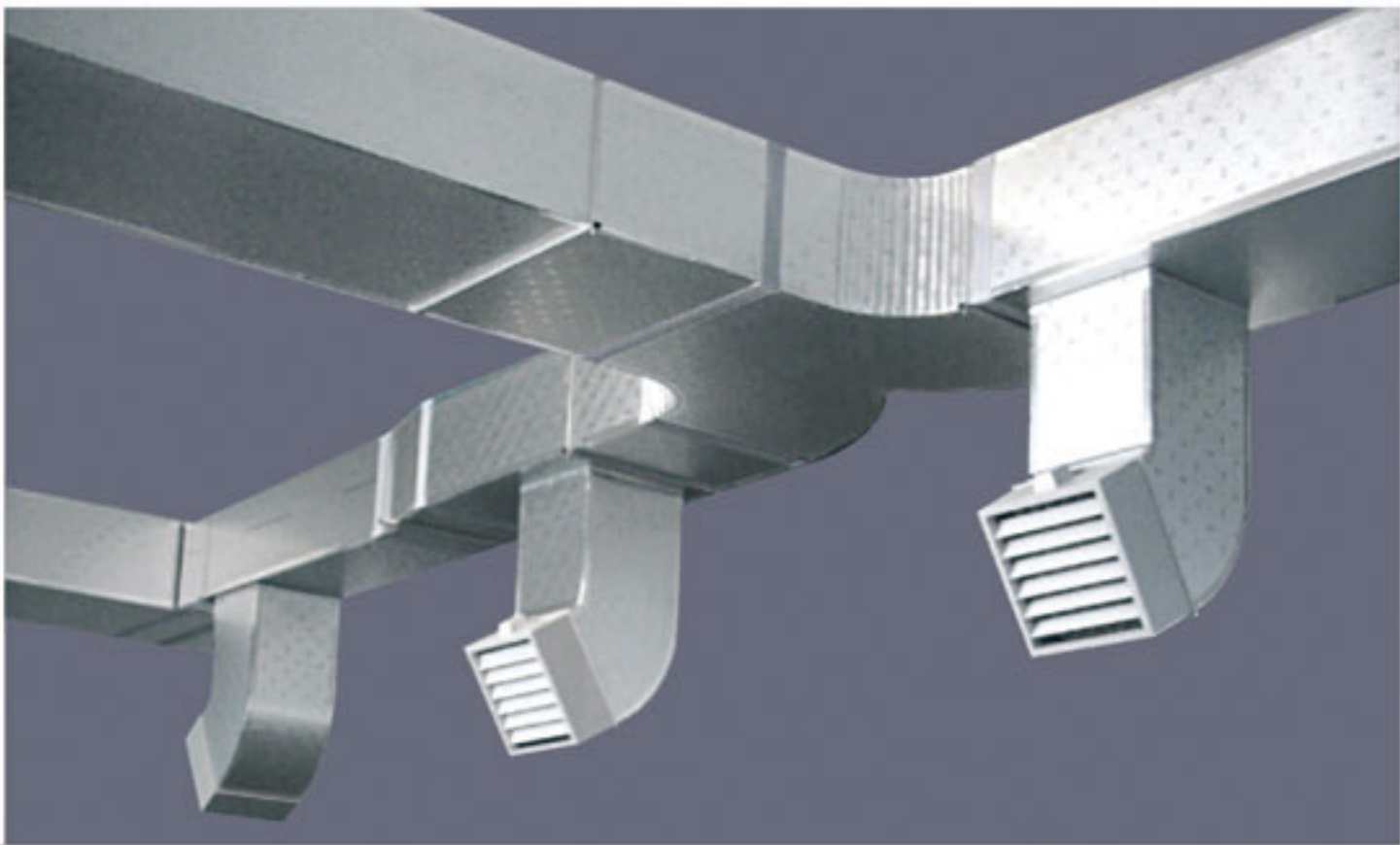
Power	Solar Panel 32VDC 3.4A 108W A/C Powe 220V 50-60HZ
Hybrid Power	110W
Rotary Speed	600rpm
Air Flow	3500m³/h
Noise	57 db(A)
Size	(L)630×(W)630×(H)420(mm)
Net Weight	14KG

Air Distribution Ducts

Particularly in the middle East & North Africa countries where the ambient temperature is high, Cellduct retains the "coolness" of the air while it is being distributed to the areas or spots most needed.

Cellduct is made from rigid polyurethane foam panel faced on both sides with a protective 80 micron aluminum foil. The material is light density foil. The material is light density, non-toxic fire-retardant.

Cellduct System



Thermal Conductivity
0.025W/m.k

Thermal Conductivity
505W/m.k

Technical Specification:

Panel Thickness: 20 mm

Foam Density : 40 kg/m3

Aluminum Foil Thickness: 80 micron

Thermal conductivity: 0.025W/m.k

Working Temperature: Max 80 °C

Cellduct employs PVC face flange with slide-in Channel as joints between duct sections. This method provides strong connection and zero air leakage.

When compared with sheet metal DUCT, Cellduct has a much better heat insulation strength making it far superior as a cool air duct.

Increasingly, pre-insulated panel air duct is replacing the traditional sheet metal duct in indoor application due to its many advantages.



Excelair Evaporative Cooling System—Industrial Application Cases

For more information, please visit our website:www.excelair.com.hk

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- Electrical & Electronics Assembly
- Textile & Garments
- Metal & Frames
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